
# Institute of Paper Science and Technology

**CONTINUOUS BASE-LINE STUDY (MULTI-WALL BAG PAPER DATA FOR JUL, AUG, SEP, 1990)**

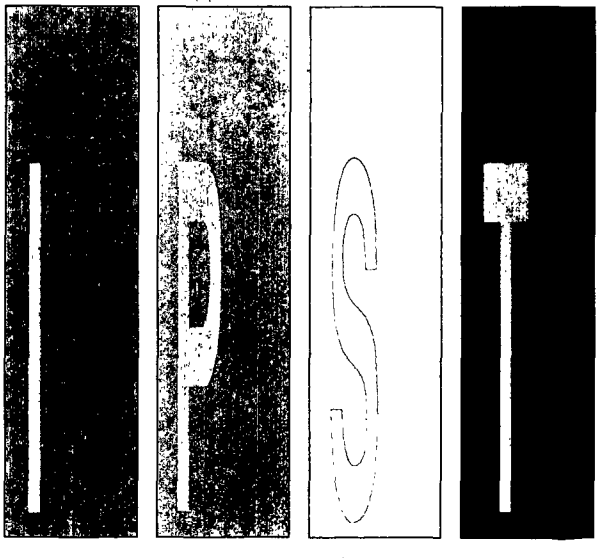
**Project 3710**

**Report One**

**A Progress Report to the**

**Kraft and Packaging Papers Division of the AMERICAN PAPER INSTITUTE**

**December 1, 1990**



Atlanta, Georgia

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KPPD BASE-LINE
3rd Quarter, 1990

THE INSTITUTE OF PAPER SCIENCE AND TECHNOLOGY

Atlanta, Georgia

# CONTINUOUS BASE-LINE STUDY
# (MULTI-WALL BAG PAPER DATA FOR JUL, AUG, SEP, 1990)

Project 3710

Report One

A Progress Report

to

THE KRAFT AND PACKAGING PAPERS DIVISION

OF THE

AMERICAN PAPER INSTITUTE



December 1, 1990

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## Part I: SUMMARY OF MOISTURE CONTENT DATA

| | | JUL | AUG | SEPT |
|---|---|---|---|---|
| Multiwall Grade Wt. | | **Moisture Content, %** | | |
| 40 lb. Flat | AVG | 5.4 (10) | 5.2 (9) | 5.3 (9) |
| | S.D. | 0.54 | 0.69 | 0.93 |
| 50 lb. Flat | AVG | 5.6 (12) | 5.2 (14) | 5.3 (12) |
| | S.D. | 0.68 | 0.81 | 0.88 |
| 60 lb. Flat | AVG | 5.8 (11) | 5.7 (11) | 5.5 (11) |
| | S.D. | 0.61 | 0.83 | 0.85 |
| 40 lb. Extensible | AVG | (0) | (0) | 4.2 (1) |
| | S.D. | -- | -- | -- |
| 50 lb. Extensible | AVG | 3.9 (3) | 4.6 (3) | 4.2 (5) |
| | S.D. | 0.30 | 1.18 | 1.04 |
| 60 lb. Extensible | AVG | 4.0 (3) | 4.7 (4) | 4.8 (4) |
| | S.D. | 0.17 | 0.80 | 0.93 |

Note: S.D. is Standard Deviation of current machine averages.
AVG is current KPPD average (no. of machines is indicated in ( ).

## Part II: SUMMARY OF ADJUSTED BASIS WEIGHT DATA

| | | JUL | AUG | SEPT |
|---|---|---|---|---|
| **Multiwall Grade Wt.** | | **Adjusted Basis Weight, lb/3000 sq.ft.** | | |
| 40 lb. Flat | AVG | 42.2 (10) | 41.9 (9) | 41.8 (9) |
| | S.D. | 1.50 | 1.58 | 1.36 |
| 50 lb. Flat | AVG | 51.9 (12) | 52.1 (14) | 51.9 (12) |
| | S.D. | 1.44 | 1.50 | 1.14 |
| 60 lb. Flat | AVG | 61.8 (11) | 61.7 (11) | 62.0 (11) |
| | S.D. | 1.61 | 1.11 | 1.28 |
| 40 lb. Extensible | AVG | (0) | (0) | 40.2 (1) |
| | S.D. | -- | -- | -- |
| 50 lb. Extensible | AVG | 52.1 (3) | 52.2 (3) | 51.5 (5) |
| | S.D. | 0.85 | 1.34 | 0.89 |
| 60 lb. Extensible | AVG | 62.2 (3) | 61.2 (4) | 61.5 (4) |
| | S.D. | 1.80 | 1.42 | 0.96 |

Note: S.D. is Standard Deviation of current machine averages.
AVG is current KPPD average (no. of machines is indicated in ( ).

## Part III: SUMMARY OF POROSITY DATA

| | | JUL | AUG | SEPT |
|---|---|---|---|---|
| **Multiwall Grade Wt.** | | **Porosity, s/100 cc** | | |
| 40 lb. Flat | AVG | 12 (10) | 12 (9) | 11 (9) |
| | S.D. | 6.2 | 6.1 | 5.6 |
| 50 lb. Flat | AVG | 12 (12) | 11 (14) | 11 (12) |
| | S.D. | 5.2 | 6.1 | 5.6 |
| 60 lb. Flat | AVG | 12 (11) | 13 (11) | 13 (11) |
| | S.D. | 5.2 | 5.9 | 6.3 |
| 40 lb. Extensible | AVG | (0) | (0) | 8 (1) |
| | S.D. | -- | -- | -- |
| 50 lb. Extensible | AVG | 8 (3) | 7 (2) | 9 (4) |
| | S.D. | 3.5 | 1.4 | 4.3 |
| 60 lb. Extensible | AVG | 9 (3) | 10 (3) | 15 (3) |
| | S.D. | 3.5 | 0.0 | 10.3 |

Note: S.D. is Standard Deviation of current machine averages.
AVG is current KPPD average (no. of machines is indicated in ( ).

Part IV: SUMMARY OF TEAR RESISTANCE DATA

| | | JUL | AUG | SEPT |
|---|---|---|---|---|
| **Multiwall Grade Wt.** | | | **MD Tear, g** | |
| 40 lb. Flat | AVG | 95 (10) | 94 (9) | 94 (9) |
| | S.D. | 6.2 | 6.5 | 7.1 |
| 50 lb. Flat | AVG | 120 (12) | 121 (14) | 120 (12) |
| | S.D. | 8.5 | 8.8 | 7.9 |
| 60 lb. Flat | AVG | 152 (11) | 152 (11) | 149 (11) |
| | S.D. | 15.7 | 12.0 | 7.0 |
| 40 lb. Extensible | AVG | (0) | (0) | 93 (1) |
| | S.D. | -- | -- | -- |
| 50 lb. Extensible | AVG | 130 (3) | 131 (2) | 121 (4) |
| | S.D. | 12.3 | 6.4 | 9.2 |
| 60 lb. Extensible | AVG | 167 (3) | 156 (3) | 145 (3) |
| | S.D. | 16.1 | 16.2 | 7.9 |
| **Multiwall Grade Wt.** | | | **Total Tear, g** | |
| 40 lb. Flat | AVG | 198 (9) | 199 (8) | 196 (9) |
| | S.D. | 10.6 | 12.1 | 12.5 |
| 50 lb. Flat | AVG | 252 (11) | 249 (13) | 250 (12) |
| | S.D. | 15.1 | 14.8 | 13.1 |
| 60 lb. Flat | AVG | 317 (10) | 315 (11) | 311 (11) |
| | S.D. | 23.2 | 21.5 | 15.5 |
| 40 lb. Extensible | AVG | (0) | (0) | 193 (1) |
| | S.D. | -- | -- | -- |
| 50 lb. Extensible | AVG | 285 (3) | 295 (2) | 270 (4) |
| | S.D. | 26.5 | 33.2 | 26.4 |
| 60 lb. Extensible | AVG | 351 (3) | 355 (3) | 325 (3) |
| | S.D. | 23.3 | 11.5 | 10.2 |

Note: S.D. is Standard Deviation of current machine averages.
AVG is current KPPD average (no. of machines is indicated in ( ).

Part V: SUMMARY OF TENSILE DATA

| | | JUL | AUG | SEPT |
|---|---|---|---|---|
| **Multiwall Grade Wt.** | | | **CD Tensile, lb/in** | |
| 40 lb. Flat | AVG | 17.7 (10) | 17.9 (9) | 18.0 (9) |
| | S.D. | 1.38 | 1.53 | 1.04 |
| 50 lb. Flat | AVG | 21.4 (12) | 22.0 (14) | 21.7 (12) |
| | S.D. | 1.14 | 1.35 | 1.25 |
| 60 lb. Flat | AVG | 24.2 (11) | 24.8 (11) | 24.2 (11) |
| | S.D. | 1.76 | 1.41 | 1.60 |

| **Multiwall Grade Wt.** | | | **Total Tensile, lb/in** | |
|---|---|---|---|---|
| 40 lb. Flat | AVG | 47.1 (9) | 47.7 (8) | 48.5 (9) |
| | S.D. | 2.52 | 2.20 | 2.04 |
| 50 lb. Flat | AVG | 57.4 (11) | 58.2 (13) | 57.7 (12) |
| | S.D. | 2.30 | 3.41 | 3.45 |
| 60 lb. Flat | AVG | 67.2 (10) | 68.2 (11) | 67.4 (11) |
| | S.D. | 2.67 | 3.55 | 2.40 |

Note: S.D. is Standard Deviation of current machine averages.
AVG is current KPPD average (no. of machines is indicated in ( ).

## Part VI: SUMMARY OF STRETCH DATA

| | | JUL | AUG | SEPT |
|---|---|---|---|---|
| **Multiwall Grade Wt.** | | | **MD Stretch, %** | |
| 40 lb. Extensible | AVG | (0) | (0) | 6.7 (1) |
| | S.D. | -- | -- | -- |
| 50 lb. Extensible | AVG | 6.9 (3) | 6.8 (3) | 6.8 (5) |
| | S.D. | 0.67 | 0.91 | 0.74 |
| 60 lb. Extensible | AVG | 6.4 (3) | 6.6 (4) | 7.2 (4) |
| | S.D. | 0.67 | 0.49 | 0.43 |

| **Multiwall Grade Wt.** | | | **CD Stretch, %** | |
|---|---|---|---|---|
| 40 lb. Extensible | AVG | (0) | (0) | 5.5 (1) |
| | S.D. | -- | -- | -- |
| 50 lb. Extensible | AVG | 5.4 (3) | 5.1 (3) | 5.4 (5) |
| | S.D. | 1.11 | 0.26 | 0.98 |
| 60 lb. Extensible | AVG | 5.1 (3) | 5.3 (4) | 5.6 (4) |
| | S.D. | 0.66 | 0.35 | 0.62 |

Note: S.D. is Standard Deviation of current machine averages.
AVG is current KPPD average (no. of machines is indicated in ( ).

Part VII: SUMMARY OF TEA DATA

| | | JUL | AUG | SEPT |
|---|---|---|---|---|
| **Multiwall Grade Wt.** | | **CD TEA, ft.lb/sq.ft.** | | |
| 40 lb. Extensible | AVG | (0) | (0) | 8.0 (1) |
| | S.D. | -- | -- | -- |
| 50 lb. Extensible | AVG | 7.3 (3) | 7.0 (3) | 7.7 (5) |
| | S.D. | 1.72 | 0.66 | 1.52 |
| 60 lb. Extensible | AVG | 9.1 (3) | 9.0 (4) | 9.4 (4) |
| | S.D. | 1.50 | 0.93 | 1.31 |

| **Multiwall Grade Wt.** | | **Total TEA, ft.lb/sq.ft.** | | |
|---|---|---|---|---|
| 40 lb. Extensible | AVG | (0) | (0) | 18.2 (1) |
| | S.D. | -- | -- | -- |
| 50 lb. Extensible | AVG | 20.3 (3) | 20.5 (3) | 22.0 (5) |
| | S.D. | 3.95 | 1.50 | 2.52 |
| 60 lb. Extensible | AVG | 23.0 (3) | 25.1 (4) | 25.4 (4) |
| | S.D. | 2.50 | 2.34 | 3.80 |

Note: S.D. is Standard Deviation of current machine averages.
AVG is current KPPD average (no. of machines is indicated in ( ).

## INTRODUCTION

The continuous baseline study is a compilation of monthly averages of mill test data obtained routinely on six major grade weights of multiwall bag paper manufactured in the mills of K.P.P.D. members. Data are included for individual machines which produced at least 50 tons of one or more of the following three major grade weights during a given period: 40, 50, and 60 lb flat; or any tonnage of 40, 50, and 60 lb extensible.

Mill data are included for moisture content, basis weight, porosity, MD tear, and total tear for all grades; CD tensile and total tensile for flat grades; and MD stretch, CD stretch, CD TEA, and total TEA for extensible grades.

Participating mills are asked to report reel moisture content, basis weight, and moisture content corresponding to the basis weight measurement (if different from reel moisture). An adjusted basis weight is then calculated corresponding to a moisture content of 7.25% (AD basis). Only the reel moisture content and the adjusted basis weights are included in the report.

The type of tear tester (old or new style) used by each mill is given in Table XX. For those mills using the new style tester, the reported tear values were adjusted to an estimated result for the old style tester using the following multipliers:

| Grade Weight | MD Tear | Total Tear |
|---|---|---|
| 40 lb | 1.043 | 1.041 |
| 50 lb | 1.016 | 1.016 |
| 60 lb | 1.051 | 1.044 |

The type of tensile tester (T404 or T494) used by each mill is also given in Table XX. For those mills using the tester described in T494, the reported tensile values were adjusted to an estimated T404 result using the following multipliers:

| Grade Weight | CD Tensile | Total Tensile |
|---|---|---|
| 40 lb | 1.061 | 1.042 |
| 50 lb | 1.055 | 1.030 |
| 60 lb | 1.009 | 1.013 |

The above multipliers are based on data in Report Three of Project 3386, December 7, 1979.

## PRESENTATION OF DATA

For the six major grade weights of multiwall bag paper referred to earlier, mill test averages for reel moisture content, adjusted basis weight, porosity, MD tear, and total tear for all grades; CD tensile and total tensile for flat grades; and MD stretch, CD stretch, CD TEA, and total TEA for extensible grades are compiled in the following tables:

| Table Number | Description |
|---|---|
| I-II-III | Mill Data on 40 lb Flat Multiwall Bag |
| IV-V-VI | Mill Data on 50 lb Flat Multiwall Bag |
| VII-VIII-IX | Mill Data on 60 lb Flat Multiwall Bag |
| X-XI-XII | Mill Data on 40 lb Extensible Multiwall Bag |
| XIII-XIV-XV | Mill Data on 50 lb Extensible Multiwall Bag |
| XVI-XVII-XVIII | Mill Data on 60 lb Extensible Multiwall Bag |

Data submitted by the participating mills relative to conditioning and testing environments are summarized in Table XIX. Data submitted relative to tear and tensile variables are summarized in Table XX.

The procedures used in calculating adjusted basis weight, cumulative machine averages, machine indexes, and K.P.P.D. indexes are described in the appendix.

Table I

Averages of Mill Quality Data for July 1990
40 lb Flat Multiwall Grade

| Code | Moisture Content Percent Cur. Av. | Cum. Av. | Ind. *B | Adj. Basis Wt. *A lb/3000 sq. ft. Cur. Av. | Cum. Av. | Ind. *B | Gurley Porosity s/100 cc Cur. Av. | Cum. Av. | Ind. *B |
|---|---|---|---|---|---|---|---|---|---|
| 102 | 4.8 | | | 40.6 | | | 8 | | |
| 103 | 5.9 | | | 42.3 | | | 15 | | |
| 104 | 4.4 | | | 43.7 | | | 11 | | |
| 108 | 5.3 | | | 41.2 | | | 9 | | |
| 110 | 4.8 | | | 41.2 | | | 15 | | |
| 111 | 5.7 | | | 43.3 | | | 6 | | |
| 112 | 6.1 | | | 40.1 | | | 27 | | |
| 118 | 5.4 | | | 41.3 | | | 8 | | |
| 119 | 5.5 | | | 44.7 | | | 7 | | |
| 129 | 5.6 | | | 43.1 | | | 10 | | |
| KPPD | 5.4 | | | 42.2 | | | 12 | | |

| Code | MD Tear g/sheet Cur. Av. | Cum. Av. | Ind. *B | Total Tear g/sheet Cur. Av. | Cum. Av. | Ind. *B |
|---|---|---|---|---|---|---|
| 102 | 89 | | | 185 | | |
| 103 | 87 | | | 195 | | |
| 104 | 96 | | | 208 | | |
| 108 | 102 | | | | | |
| 110 | 93 | | | 190 | | |
| 111 | 107 | | | 217 | | |
| 112 | 92 | | | 196 | | |
| 118 | 91 | | | 189 | | |
| 119 | 99 | | | 208 | | |
| 129 | 98 | | | 195 | | |
| KPPD | 95 | | | 198 | | |

Notes A and B are given in the appendix.

Table I Cont'd

Averages of Mill Quality Data for July 1990
40 lb Flat Multiwall Grade

| Code | CD Tensile lb/in Cur. Av. | CD Tensile lb/in Cum. Av. | CD Tensile lb/in Ind. *B | Total Tensile lb/in Cur. Av. | Total Tensile lb/in Cum. Av. | Total Tensile lb/in Ind. *B |
|---|---|---|---|---|---|---|
| 102 | 15.3 | | | 45.1 | | |
| 103 | 18.4 | | | 52.5 | | |
| 104 | 17.6 | | | 47.8 | | |
| 108 | 18.1 | | | | | |
| 110 | 18.9 | | | 49.6 | | |
| 111 | 17.9 | | | 46.9 | | |
| 112 | 15.9 | | | 44.8 | | |
| 118 | 18.6 | | | 46.7 | | |
| 119 | 16.3 | | | 45.3 | | |
| 129 | 19.5 | | | 45.6 | | |
| KPPD | 17.7 | | | 47.1 | | |

Table II

Averages of Mill Quality Data for August 1990
40 lb Flat Multiwall Grade

| Code | Moisture Content Percent Cur. Av. | Moisture Content Percent Cum. Av. | Moisture Content Percent Ind. *B | Adj. Basis Wt. *A lb/3000 sq. ft. Cur. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Cum. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Ind. *B | Gurley Porosity s/100 cc Cur. Av. | Gurley Porosity s/100 cc Cum. Av. | Gurley Porosity s/100 cc Ind. *B |
|---|---|---|---|---|---|---|---|---|---|
| 102 | 4.2 | 4.8 | 79 | 40.9 | 40.6 | 97 | 8 | 8 | 69 |
| 103 | 5.9 | 5.9 | 110 | 42.9 | 42.3 | 102 | 14 | 15 | 121 |
| 104 | 4.4 | 4.4 | 82 | 43.6 | 43.7 | 103 | 14 | 11 | 121 |
| 108 | 5.4 | 5.3 | 101 | 40.2 | 41.2 | 95 | 7 | 9 | 60 |
| 110 | 4.8 | 4.8 | 90 | 40.9 | 41.2 | 97 | 13 | 15 | 112 |
| 111 | 5.0 | 5.7 | 93 | 43.7 | 43.3 | 104 | 5 | 6 | 43 |
| 112 | 6.3 | 6.1 | 118 | 40.2 | 40.1 | 95 | 26 | 27 | 224 |
| 118 | 5.5 | 5.4 | 103 | 41.1 | 41.3 | 98 | 10 | 8 | 86 |
| 119 | | 5.5 | | | 44.7 | | | 7 | |
| 129 | 5.6 | 5.6 | 105 | 44.0 | 43.1 | 104 | 11 | 10 | 95 |
| KPPD | 5.2 | 5.4 | 98 | 41.9 | 42.2 | 100 | 12 | 12 | 103 |

| Code | MD Tear g/sheet Cur. Av. | MD Tear g/sheet Cum. Av. | MD Tear g/sheet Ind. *B | Total Tear g/sheet Cur. Av. | Total Tear g/sheet Cum. Av. | Total Tear g/sheet Ind. *B |
|---|---|---|---|---|---|---|
| 102 | 87 | 89 | 91 | 178 | 185 | 90 |
| 103 | 87 | 87 | 91 | 199 | 195 | 100 |
| 104 | 93 | 96 | 97 | 200 | 208 | 101 |
| 108 | 92 | 102 | 96 | | | |
| 110 | 102 | 93 | 107 | 206 | 190 | 104 |
| 111 | 106 | 107 | 111 | 214 | 217 | 108 |
| 112 | 92 | 92 | 96 | 211 | 196 | 107 |
| 118 | 91 | 91 | 95 | 186 | 189 | 94 |
| 119 | | 99 | | | 208 | |
| 129 | 97 | 98 | 102 | 199 | 195 | 100 |
| KPPD | 94 | 95 | 99 | 199 | 198 | 101 |

Notes A and B are given in the appendix.

Table II Cont'd

Averages of Mill Quality Data for August 1990
40 lb Flat Multiwall Grade

| | CD Tensile lb/in | | | Total Tensile lb/in | | |
|---|---|---|---|---|---|---|
| Code | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 102 | 17.1 | 15.3 | 97 | 47.7 | 45.1 | 101 |
| 103 | 16.9 | 18.4 | 96 | 51.8 | 52.5 | 110 |
| 104 | 17.4 | 17.6 | 99 | 48.8 | 47.8 | 104 |
| 108 | 19.9 | 18.1 | 113 | | | |
| 110 | 18.5 | 18.9 | 105 | 46.8 | 49.6 | 99 |
| 111 | 19.3 | 17.9 | 109 | 49.1 | 46.9 | 104 |
| 112 | 14.9 | 15.9 | 84 | 44.8 | 44.8 | 95 |
| 118 | 18.2 | 18.6 | 103 | 45.7 | 46.7 | 97 |
| 119 | | 16.3 | | | 45.3 | |
| 129 | 19.1 | 19.5 | 108 | 46.9 | 45.6 | 99 |
| KPPD | 17.9 | 17.7 | 102 | 47.7 | 47.1 | 101 |

Table III

Averages of Mill Quality Data for September 1990
40 lb Flat Multiwall Grade

| Code | Moisture Content Percent Cur. Av. | Moisture Content Percent Cum. Av. | Moisture Content Percent Ind. *B | Adj. Basis Wt. *A lb/3000 sq. ft. Cur. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Cum. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Ind. *B | Gurley Porosity s/100 cc Cur. Av. | Gurley Porosity s/100 cc Cum. Av. | Gurley Porosity s/100 cc Ind. *B |
|---|---|---|---|---|---|---|---|---|---|
| 102 | 3.5 | 4.5 | 66 | 40.7 | 40.8 | 97 | 10 | 8 | 85 |
| 103 | 6.1 | 5.9 | 115 | 43.2 | 42.6 | 103 | 14 | 14 | 119 |
| 104 | 4.4 | 4.4 | 83 | 43.7 | 43.6 | 104 | 12 | 12 | 102 |
| 108 | 5.5 | 5.4 | 104 | 40.3 | 40.7 | 96 | 5 | 8 | 42 |
| 110 | 4.8 | 4.8 | 91 | 41.2 | 41.0 | 98 | 14 | 14 | 119 |
| 111 | 6.0 | 5.4 | 113 | 42.9 | 43.5 | 102 | 5 | 6 | 42 |
| 112 | 6.4 | 6.2 | 121 | 40.1 | 40.2 | 95 | 23 | 26 | 195 |
| 118 | 5.7 | 5.4 | 108 | 41.5 | 41.2 | 99 | 8 | 9 | 68 |
| 119 | | 5.5 | | | 44.7 | | | 7 | |
| 129 | 5.5 | 5.6 | 104 | 42.9 | 43.6 | 102 | 8 | 10 | 68 |
| KPPD | 5.3 | 5.3 | 101 | 41.8 | 42.0 | 99 | 11 | 12 | 93 |

| Code | MD Tear g/sheet Cur. Av. | MD Tear g/sheet Cum. Av. | MD Tear g/sheet Ind. *B | Total Tear g/sheet Cur. Av. | Total Tear g/sheet Cum. Av. | Total Tear g/sheet Ind. *B |
|---|---|---|---|---|---|---|
| 102 | 83 | 88 | 88 | 173 | 181 | 87 |
| 103 | 86 | 87 | 91 | 189 | 197 | 95 |
| 104 | 96 | 94 | 101 | 203 | 204 | 102 |
| 108 | 93 | 97 | 98 | 203 | | 102 |
| 110 | 99 | 98 | 104 | 201 | 198 | 101 |
| 111 | 107 | 106 | 113 | 218 | 215 | 110 |
| 112 | 92 | 92 | 97 | 193 | 204 | 97 |
| 118 | 91 | 91 | 96 | 188 | 187 | 95 |
| 119 | | 99 | | | 208 | |
| 129 | 97 | 98 | 102 | 196 | 197 | 99 |
| KPPD | 94 | 95 | 99 | 196 | 199 | 99 |

Notes A and B are given in the appendix.

Table III Cont'd

Averages of Mill Quality Data for September 1990
40 lb Flat Multiwall Grade

| | CD Tensile lb/in | | | Total Tensile lb/in | | |
|---|---|---|---|---|---|---|
| Code | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 102 | 16.3 | 16.1 | 92 | 48.8 | 46.5 | 103 |
| 103 | 17.8 | 17.6 | 100 | 53.2 | 52.1 | 112 |
| 104 | 18.0 | 17.5 | 101 | 47.2 | 48.3 | 100 |
| 108 | 17.4 | 19.1 | 98 | 48.6 | | 102 |
| 110 | 18.7 | 18.7 | 105 | 47.5 | 48.1 | 100 |
| 111 | 18.9 | 18.7 | 106 | 48.8 | 47.9 | 103 |
| 112 | 17.0 | 15.4 | 96 | 49.0 | 44.8 | 103 |
| 118 | 18.4 | 18.4 | 103 | 47.9 | 46.2 | 101 |
| 119 | | 16.3 | | | 45.3 | |
| 129 | 19.7 | 19.3 | 111 | 45.7 | 46.3 | 96 |
| KPPD | 18.0 | 17.8 | 101 | 48.5 | 47.4 | 102 |

Table IV

Averages of Mill Quality Data for July 1990
50 lb Flat Multiwall Grade

| Code | Moisture Content Percent Cur. Av. | Cum. Av. | Ind. *B | Adj. Basis Wt. *A lb/3000 sq. ft. Cur. Av. | Cum. Av. | Ind. *B | Gurley Porosity s/100 cc Cur. Av. | Cum. Av. | Ind. *B |
|---|---|---|---|---|---|---|---|---|---|
| 102 | 5.1 | | | 50.8 | | | 9 | | |
| 103 | 6.0 | | | 52.1 | | | 14 | | |
| 104 | 4.5 | | | 54.0 | | | 12 | | |
| 108 | 5.6 | | | 50.3 | | | 8 | | |
| 109 | 6.2 | | | 50.2 | | | 14 | | |
| 110 | 4.6 | | | 51.5 | | | 14 | | |
| 114 | 5.8 | | | 53.2 | | | 6 | | |
| 116 | 5.9 | | | 51.4 | | | 11 | | |
| 118 | 6.0 | | | 51.7 | | | 10 | | |
| 122 | | | | | | | | | |
| 123 | 6.7 | | | 50.0 | | | 26 | | |
| 126 | 4.8 | | | 54.0 | | | 8 | | |
| 129 | 5.5 | | | 53.1 | | | 9 | | |
| 130 | | | | | | | | | |
| KPPD | 5.6 | | | 51.9 | | | 12 | | |

| Code | MD Tear g/sheet Cur. Av. | Cum. Av. | Ind. *B | Total Tear g/sheet Cur. Av. | Cum. Av. | Ind. *B |
|---|---|---|---|---|---|---|
| 102 | 114 | | | 239 | | |
| 103 | 110 | | | 245 | | |
| 104 | 133 | | | 275 | | |
| 108 | 121 | | | | | |
| 109 | 118 | | | 250 | | |
| 110 | 121 | | | 246 | | |
| 114 | 126 | | | 262 | | |
| 116 | 110 | | | 233 | | |
| 118 | 117 | | | 244 | | |
| 122 | | | | | | |
| 123 | 117 | | | 248 | | |
| 126 | 138 | | | 283 | | |
| 129 | 120 | | | 250 | | |
| 130 | | | | | | |
| KPPD | 120 | | | 252 | | |

Notes A and B are given in the appendix.

Table IV Cont'd

Averages of Mill Quality Data for July 1990
50 lb Flat Multiwall Grade

| | CD Tensile lb/in | | | Total Tensile lb/in | | |
|---|---|---|---|---|---|---|
| Code | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 102 | 20.2 | | | 57.2 | | |
| 103 | 20.4 | | | 60.7 | | |
| 104 | 21.8 | | | 57.0 | | |
| 108 | 23.0 | | | | | |
| 109 | 20.6 | | | 58.9 | | |
| 110 | 23.4 | | | 60.9 | | |
| 114 | 21.5 | | | 58.9 | | |
| 116 | 19.5 | | | 54.6 | | |
| 118 | 21.5 | | | 54.3 | | |
| 122 | | | | | | |
| 123 | 21.1 | | | 55.6 | | |
| 126 | 21.4 | | | 55.4 | | |
| 129 | 22.3 | | | 57.9 | | |
| 130 | | | | | | |
| KPPD | 21.4 | | | 57.4 | | |

Table V

Averages of Mill Quality Data for August 1990
50 lb Flat Multiwall Grade

| Code | Moisture Content Percent Cur. Av. | Moisture Content Percent Cum. Av. | Moisture Content Percent Ind. *B | Adj. Basis Wt. *A lb/3000 sq. ft. Cur. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Cum. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Ind. *B | Gurley Porosity s/100 cc Cur. Av. | Gurley Porosity s/100 cc Cum. Av. | Gurley Porosity s/100 cc Ind. *B |
|---|---|---|---|---|---|---|---|---|---|
| 102 | 4.4 | 5.1 | 79 | 50.9 | 50.8 | 98 | 7 | 9 | 60 |
| 103 | 6.0 | 6.0 | 108 | 52.0 | 52.1 | 100 | 14 | 14 | 119 |
| 104 | 4.4 | 4.5 | 79 | 54.7 | 54.0 | 105 | 17 | 12 | 145 |
| 108 | 5.1 | 5.6 | 92 | 50.3 | 50.3 | 97 | 6 | 8 | 51 |
| 109 | 6.2 | 6.2 | 112 | 50.0 | 50.2 | 96 | 13 | 14 | 111 |
| 110 | 4.7 | 4.6 | 85 | 51.4 | 51.5 | 99 | 14 | 14 | 119 |
| 114 | 5.8 | 5.8 | 104 | 53.2 | 53.2 | 103 | 6 | 6 | 51 |
| 116 | 6.1 | 5.9 | 110 | 51.5 | 51.4 | 99 | 10 | 11 | 85 |
| 118 | 5.8 | 6.0 | 104 | 51.0 | 51.7 | 98 | 8 | 10 | 68 |
| 122 | 4.3 | | 77 | 54.0 | | 104 | 6 | | 51 |
| 123 | 6.1 | 6.7 | 110 | 50.5 | 50.0 | 97 | 29 | 26 | 247 |
| 126 | 4.4 | 4.8 | 79 | 53.6 | 54.0 | 103 | 10 | 8 | 85 |
| 129 | 5.5 | 5.5 | 99 | 52.7 | 53.1 | 102 | 8 | 9 | 68 |
| 130 | 4.0 | | 72 | 53.3 | | 103 | 11 | | 94 |
| KPPD | 5.2 | 5.6 | 94 | 52.1 | 51.9 | 100 | 11 | 12 | 97 |

| Code | MD Tear g/sheet Cur. Av. | MD Tear g/sheet Cum. Av. | MD Tear g/sheet Ind. *B | Total Tear g/sheet Cur. Av. | Total Tear g/sheet Cum. Av. | Total Tear g/sheet Ind. *B |
|---|---|---|---|---|---|---|
| 102 | 113 | 114 | 94 | 230 | 239 | 91 |
| 103 | 111 | 110 | 92 | 243 | 245 | 96 |
| 104 | 122 | 133 | 101 | 250 | 275 | 99 |
| 108 | 134 | 121 | 111 | | | |
| 109 | 114 | 119 | 95 | 245 | 250 | 97 |
| 110 | 123 | 121 | 102 | 253 | 246 | 100 |
| 114 | 135 | 126 | 112 | 278 | 262 | 110 |
| 116 | 111 | 110 | 92 | 239 | 233 | 95 |
| 118 | 115 | 117 | 95 | 237 | 244 | 94 |
| 122 | 131 | | 109 | 259 | | 103 |
| 123 | 119 | 117 | 99 | 258 | 248 | 102 |
| 126 | 133 | 138 | 110 | 271 | 283 | 107 |
| 129 | 121 | 120 | 100 | 250 | 250 | 99 |
| 130 | 114 | | 95 | 228 | | 90 |
| KPPD | 121 | 121 | 101 | 249 | 252 | 99 |

Notes A and B are given in the appendix.

Table V Cont'd

Averages of Mill Quality Data for August 1990
50 lb Flat Multiwall Grade

| | CD Tensile lb/in | | | Total Tensile lb/in | | |
|---|---|---|---|---|---|---|
| Code | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 102 | 21.0 | 20.2 | 98 | 57.8 | 57.2 | 101 |
| 103 | 22.4 | 20.4 | 105 | 65.0 | 60.7 | 113 |
| 104 | 22.5 | 21.8 | 105 | 57.2 | 57.0 | 100 |
| 108 | 23.9 | 23.0 | 112 | | | |
| 109 | 21.1 | 20.6 | 99 | 60.0 | 58.9 | 105 |
| 110 | 22.6 | 23.4 | 106 | 62.4 | 60.9 | 109 |
| 114 | 21.8 | 21.5 | 102 | 58.4 | 58.9 | 102 |
| 116 | 19.5 | 19.5 | 91 | 53.0 | 54.6 | 92 |
| 118 | 22.7 | 21.5 | 106 | 56.2 | 54.3 | 98 |
| 122 | 19.6 | | 92 | 52.6 | | 92 |
| 123 | 22.2 | 21.1 | 104 | 56.6 | 55.6 | 99 |
| 126 | 23.1 | 21.4 | 108 | 58.7 | 55.4 | 102 |
| 129 | 23.9 | 22.3 | 112 | 57.6 | 57.9 | 100 |
| 130 | 21.6 | | 101 | 60.6 | | 106 |
| KPPD | 22.0 | 21.4 | 103 | 58.2 | 57.4 | 101 |

Table VI

Averages of Mill Quality Data for September 1990
50 lb Flat Multiwall Grade

| Code | Moisture Content Percent Cur. Av. | Moisture Content Percent Cum. Av. | Moisture Content Percent Ind. *B | Adj. Basis Wt. *A lb/3000 sq. ft. Cur. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Cum. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Ind. *B | Gurley Porosity s/100 cc Cur. Av. | Gurley Porosity s/100 cc Cum. Av. | Gurley Porosity s/100 cc Ind. *B |
|---|---|---|---|---|---|---|---|---|---|
| 102 | 3.8 | 4.8 | 71 | 51.0 | 50.8 | 98 | 8 | 8 | 69 |
| 103 | 6.0 | 6.0 | 112 | 52.4 | 52.0 | 101 | 14 | 14 | 121 |
| 104 | | 4.4 | | | 54.4 | | | 14 | |
| 108 | 5.5 | 5.4 | 102 | 50.3 | 50.3 | 97 | 5 | 7 | 43 |
| 109 | 6.2 | 6.2 | 115 | 50.4 | 50.1 | 97 | 16 | 14 | 138 |
| 110 | 4.8 | 4.6 | 89 | 51.2 | 51.4 | 99 | 14 | 14 | 121 |
| 114 | 5.5 | 5.8 | 102 | 52.9 | 53.2 | 102 | 6 | 6 | 52 |
| 116 | 6.1 | 6.0 | 113 | 51.5 | 51.4 | 99 | 11 | 10 | 95 |
| 118 | 5.9 | 5.9 | 110 | 52.9 | 51.8 | 102 | 7 | 9 | 61 |
| 122 | 4.1 | 4.3 | 76 | 52.8 | 54.0 | 102 | 7 | 6 | 61 |
| 123 | 6.3 | 6.4 | 117 | 50.6 | 50.2 | 97 | 25 | 28 | 216 |
| 126 | 4.2 | 4.6 | 78 | 53.4 | 53.8 | 103 | 10 | 9 | 87 |
| 129 | 5.6 | 5.5 | 104 | 52.9 | 52.9 | 102 | 10 | 8 | 87 |
| 130 | | 4.0 | | | 53.3 | | | 11 | |
| KPPD | 5.3 | 5.4 | 99 | 51.9 | 52.0 | 100 | 11 | 12 | 96 |

| Code | MD Tear g/sheet Cur. Av. | MD Tear g/sheet Cum. Av. | MD Tear g/sheet Ind. *B | Total Tear g/sheet Cur. Av. | Total Tear g/sheet Cum. Av. | Total Tear g/sheet Ind. *B |
|---|---|---|---|---|---|---|
| 102 | 110 | 114 | 91 | 225 | 234 | 90 |
| 103 | 108 | 110 | 89 | 241 | 244 | 96 |
| 104 | | 128 | | | 262 | |
| 108 | 124 | 128 | 103 | 265 | | 106 |
| 109 | 121 | 117 | 100 | 246 | 248 | 98 |
| 110 | 129 | 122 | 107 | 262 | 250 | 104 |
| 114 | 127 | 130 | 105 | 262 | 270 | 104 |
| 116 | 111 | 110 | 92 | 234 | 236 | 93 |
| 118 | 113 | 116 | 94 | 240 | 240 | 96 |
| 122 | 132 | 131 | 109 | 263 | 259 | 105 |
| 123 | 119 | 118 | 98 | 248 | 253 | 99 |
| 126 | 124 | 136 | 103 | 260 | 277 | 104 |
| 129 | 117 | 120 | 97 | 255 | 250 | 102 |
| 130 | | 114 | | | 228 | |
| KPPD | 120 | 121 | 99 | 250 | 251 | 100 |

Notes A and B are given in the appendix.

Table VI Cont'd

Averages of Mill Quality Data for September 1990
50 lb Flat Multiwall Grade

| | CD Tensile lb/in | | | Total Tensile lb/in | | |
|---|---|---|---|---|---|---|
| Code | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 102 | 20.3 | 20.6 | 94 | 57.3 | 57.5 | 99 |
| 103 | 21.9 | 21.3 | 101 | 66.1 | 62.8 | 114 |
| 104 | | 22.2 | | | 57.1 | |
| 108 | 21.7 | 23.4 | 100 | 56.3 | | 97 |
| 109 | 23.6 | 20.9 | 109 | 59.2 | 59.5 | 102 |
| 110 | 22.3 | 23.0 | 103 | 58.8 | 61.6 | 102 |
| 114 | 22.3 | 21.7 | 103 | 59.9 | 58.7 | 104 |
| 116 | 19.5 | 19.5 | 90 | 52.7 | 53.8 | 91 |
| 118 | 22.1 | 22.1 | 102 | 56.3 | 55.2 | 97 |
| 122 | 19.9 | 19.6 | 92 | 53.3 | 52.6 | 92 |
| 123 | 22.2 | 21.6 | 102 | 57.7 | 56.1 | 100 |
| 126 | 21.0 | 22.3 | 97 | 56.0 | 57.1 | 97 |
| 129 | 23.1 | 23.1 | 106 | 58.7 | 57.7 | 102 |
| 130 | | 21.6 | | | 60.6 | |
| KPPD | 21.7 | 21.7 | 100 | 57.7 | 57.8 | 100 |

Table VII

Averages of Mill Quality Data for July 1990
60 lb Flat Multiwall Grade

| Code | Moisture Content Percent Cur. Av. | Moisture Content Percent Cum. Av. | Moisture Content Percent Ind. *B | Adj. Basis Wt. *A lb/3000 sq. ft. Cur. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Cum. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Ind. *B | Gurley Porosity s/100 cc Cur. Av. | Gurley Porosity s/100 cc Cum. Av. | Gurley Porosity s/100 cc Ind. *B |
|---|---|---|---|---|---|---|---|---|---|
| 102 | 5.1 | | | 60.3 | | | 12 | | |
| 103 | | | | | | | | | |
| 108 | 5.6 | | | 60.4 | | | 8 | | |
| 109 | 6.1 | | | 61.4 | | | 15 | | |
| 110 | 5.0 | | | 62.1 | | | 15 | | |
| 111 | 6.2 | | | 63.7 | | | 7 | | |
| 114 | | | | | | | | | |
| 116 | 6.3 | | | 61.4 | | | 10 | | |
| 118 | 5.8 | | | 60.1 | | | 10 | | |
| 123 | 6.8 | | | 59.6 | | | 25 | | |
| 126 | 4.8 | | | 64.1 | | | 8 | | |
| 127 | 5.9 | | | 63.8 | | | 15 | | |
| 129 | 5.9 | | | 62.7 | | | 9 | | |
| KPPD | 5.8 | | | 61.8 | | | 12 | | |

| Code | MD Tear g/sheet Cur. Av. | MD Tear g/sheet Cum. Av. | MD Tear g/sheet Ind. *B | Total Tear g/sheet Cur. Av. | Total Tear g/sheet Cum. Av. | Total Tear g/sheet Ind. *B |
|---|---|---|---|---|---|---|
| 102 | 119 | | | 287 | | |
| 103 | | | | | | |
| 108 | 164 | | | | | |
| 109 | 161 | | | 336 | | |
| 110 | 155 | | | 310 | | |
| 111 | 172 | | | 349 | | |
| 114 | | | | | | |
| 116 | 140 | | | 296 | | |
| 118 | 150 | | | 309 | | |
| 123 | 147 | | | 310 | | |
| 126 | 172 | | | 358 | | |
| 127 | 156 | | | 318 | | |
| 129 | 139 | | | 301 | | |
| KPPD | 152 | | | 317 | | |

Notes A and B are given in the appendix.

Table VII Cont'd

Averages of Mill Quality Data for July 1990
60 Lb Flat Multiwall Grade

| | CD Tensile lb/in | | | Total Tensile lb/in | | |
|---|---|---|---|---|---|---|
| Code | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 102 | 23.5 | | | 67.6 | | |
| 103 | | | | | | |
| 108 | 23.0 | | | | | |
| 109 | 23.8 | | | 66.8 | | |
| 110 | 29.3 | | | 72.7 | | |
| 111 | 23.9 | | | 67.5 | | |
| 114 | | | | | | |
| 116 | 23.2 | | | 64.0 | | |
| 118 | 24.2 | | | 62.9 | | |
| 123 | 23.2 | | | 67.9 | | |
| 126 | 24.6 | | | 66.9 | | |
| 127 | 23.5 | | | 66.3 | | |
| 129 | 24.4 | | | 69.0 | | |
| KPPD | 24.2 | | | 67.2 | | |

Table VIII

Averages of Mill Quality Data for August 1990
60 lb Flat Multiwall Grade

| Code | Moisture Content Percent Cur. Av. | Moisture Content Percent Cum. Av. | Moisture Content Percent Ind. *B | Adj. Basis Wt. *A lb/3000 sq. ft. Cur. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Cum. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Ind. *B | Gurley Porosity s/100 cc Cur. Av. | Gurley Porosity s/100 cc Cum. Av. | Gurley Porosity s/100 cc Ind. *B |
|---|---|---|---|---|---|---|---|---|---|
| 102 | 4.0 | 5.1 | 69 | 60.8 | 60.3 | 98 | 10 | 12 | 82 |
| 103 | 6.0 | | 104 | 62.1 | | 101 | 12 | | 99 |
| 108 | | 5.6 | | | 60.4 | | | 8 | |
| 109 | 6.2 | 6.1 | 107 | 60.6 | 61.4 | 98 | 15 | 15 | 123 |
| 110 | 4.8 | 5.0 | 83 | 61.8 | 62.1 | 100 | 14 | 15 | 115 |
| 111 | 6.5 | 6.2 | 113 | 62.2 | 63.7 | 101 | 6 | 7 | 49 |
| 114 | | | | | | | | | |
| 116 | 6.3 | 6.3 | 109 | 61.6 | 61.4 | 100 | 10 | 10 | 82 |
| 118 | 5.9 | 5.8 | 102 | 60.8 | 60.1 | 98 | 10 | 10 | 82 |
| 123 | 6.4 | 6.8 | 111 | 60.0 | 59.6 | 97 | 27 | 25 | 222 |
| 126 | 4.6 | 4.8 | 80 | 63.3 | 64.1 | 102 | 8 | 8 | 66 |
| 127 | 5.8 | 5.9 | 100 | 63.4 | 63.8 | 103 | 18 | 15 | 148 |
| 129 | 6.0 | 5.9 | 104 | 62.6 | 62.7 | 101 | 9 | 9 | 74 |
| KPPD | 5.7 | 5.8 | 98 | 61.7 | 61.8 | 100 | 13 | 12 | 104 |

| Code | MD Tear g/sheet Cur. Av. | MD Tear g/sheet Cum. Av. | MD Tear g/sheet Ind. *B | Total Tear g/sheet Cur. Av. | Total Tear g/sheet Cum. Av. | Total Tear g/sheet Ind. *B |
|---|---|---|---|---|---|---|
| 102 | 135 | 119 | 89 | 279 | 287 | 88 |
| 103 | 139 | | 91 | 306 | | 96 |
| 108 | | 164 | | | | |
| 109 | 161 | 161 | 106 | 330 | 336 | 104 |
| 110 | 152 | 155 | 100 | 310 | 310 | 98 |
| 111 | 168 | 172 | 110 | 346 | 349 | 109 |
| 114 | | | | | | |
| 116 | 140 | 140 | 92 | 296 | 296 | 93 |
| 118 | 148 | 150 | 97 | 304 | 309 | 96 |
| 123 | 151 | 147 | 99 | 315 | 310 | 99 |
| 126 | 171 | 172 | 112 | 349 | 358 | 110 |
| 127 | 159 | 156 | 104 | 328 | 318 | 103 |
| 129 | 144 | 139 | 95 | 300 | 301 | 95 |
| KPPD | 152 | 152 | 100 | 315 | 317 | 99 |

Notes A and B are given in the appendix.

Table VIII Cont'd

Averages of Mill Quality Data for August 1990
60 lb Flat Multiwall Grade

| | CD Tensile lb/in | | | Total Tensile lb/in | | |
|---|---|---|---|---|---|---|
| Code | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 102 | 25.0 | 23.5 | 103 | 71.8 | 67.6 | 107 |
| 103 | 26.2 | | 108 | 74.7 | | 111 |
| 108 | | 23.0 | | | | |
| 109 | 23.3 | 23.8 | 96 | 66.7 | 66.8 | 99 |
| 110 | 26.2 | 29.3 | 108 | 73.0 | 72.7 | 109 |
| 111 | 25.2 | 23.9 | 104 | 69.4 | 67.5 | 103 |
| 114 | | | | | | |
| 116 | 22.9 | 23.2 | 94 | 64.0 | 64.0 | 95 |
| 118 | 24.5 | 24.2 | 101 | 64.3 | 62.9 | 96 |
| 123 | 24.2 | 23.2 | 100 | 66.9 | 67.9 | 100 |
| 126 | 25.7 | 24.6 | 106 | 67.3 | 66.9 | 100 |
| 127 | 22.5 | 23.5 | 93 | 66.3 | 66.3 | 99 |
| 129 | 26.6 | 24.4 | 110 | 65.9 | 69.0 | 98 |
| KPPD | 24.8 | 24.2 | 102 | 68.2 | 67.2 | 102 |

Table IX

Averages of Mill Quality Data for September 1990
60 lb Flat Multiwall Grade

| Code | Moisture Content Percent Cur. Av. | Moisture Content Percent Cum. Av. | Moisture Content Percent Ind. *B | Adj. Basis Wt. *A lb/3000 sq. ft. Cur. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Cum. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Ind. *B | Gurley Porosity s/100 cc Cur. Av. | Gurley Porosity s/100 cc Cum. Av. | Gurley Porosity s/100 cc Ind. *B |
|---|---|---|---|---|---|---|---|---|---|
| 102 | 3.7 | 4.6 | 65 | 60.5 | 60.6 | 98 | 10 | 11 | 81 |
| 103 | | 6.0 | | | 62.1 | | | 12 | |
| 108 | 5.4 | 5.6 | 94 | 61.4 | 60.4 | 99 | 14 | 8 | 113 |
| 109 | 6.1 | 6.2 | 107 | 61.0 | 61.0 | 99 | 14 | 15 | 113 |
| 110 | 4.9 | 4.9 | 86 | 62.4 | 62.0 | 101 | 14 | 14 | 113 |
| 111 | | 6.4 | | | 63.0 | | | 6 | |
| 114 | 5.4 | | 94 | 62.3 | | 101 | 4 | | 32 |
| 116 | 6.3 | 6.3 | 110 | 61.6 | 61.5 | 100 | 10 | 10 | 81 |
| 118 | 5.9 | 5.8 | 103 | 61.3 | 60.4 | 99 | 7 | 10 | 56 |
| 123 | 6.5 | 6.6 | 113 | 60.3 | 59.8 | 98 | 27 | 26 | 218 |
| 126 | 4.6 | 4.7 | 80 | 64.1 | 63.7 | 104 | 10 | 8 | 81 |
| 127 | 6.0 | 5.8 | 105 | 63.9 | 63.6 | 103 | 17 | 16 | 137 |
| 129 | 6.1 | 6.0 | 107 | 63.0 | 62.6 | 102 | 19 | 9 | 153 |
| KPPD | 5.5 | 5.7 | 97 | 62.0 | 61.8 | 100 | 13 | 12 | 107 |

| Code | MD Tear g/sheet Cur. Av. | MD Tear g/sheet Cum. Av. | MD Tear g/sheet Ind. *B | Total Tear g/sheet Cur. Av. | Total Tear g/sheet Cum. Av. | Total Tear g/sheet Ind. *B |
|---|---|---|---|---|---|---|
| 102 | 143 | 126 | 94 | 292 | 283 | 92 |
| 103 | | 139 | | | 306 | |
| 108 | 148 | 164 | 97 | 328 | | 104 |
| 109 | 152 | 161 | 100 | 314 | 333 | 99 |
| 110 | 153 | 154 | 101 | 314 | 310 | 99 |
| 111 | | 170 | | | 347 | |
| 114 | 160 | | 105 | 340 | | 108 |
| 116 | 140 | 140 | 92 | 296 | 296 | 94 |
| 118 | 146 | 149 | 96 | 308 | 307 | 97 |
| 123 | 149 | 149 | 98 | 305 | 312 | 96 |
| 126 | 158 | 172 | 104 | 326 | 353 | 103 |
| 127 | 149 | 158 | 98 | 310 | 324 | 98 |
| 129 | 137 | 142 | 90 | 291 | 300 | 92 |
| KPPD | 149 | 152 | 98 | 311 | 316 | 98 |

Notes A and B are given in the appendix.

Table IX Cont'd

Averages of Mill Quality Data for September 1990
60 lb Flat Multiwall Grade

| | CD Tensile lb/in | | | Total Tensile lb/in | | |
|---|---|---|---|---|---|---|
| Code | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 102 | 23.6 | 24.2 | 96 | 65.8 | 69.7 | 97 |
| 103 | | 26.2 | | | 74.7 | |
| 108 | 21.3 | 23.0 | 87 | 67.4 | | 100 |
| 109 | 23.9 | 23.6 | 98 | 67.8 | 66.7 | 100 |
| 110 | 26.5 | 27.7 | 108 | 71.7 | 72.9 | 106 |
| 111 | | 24.6 | | | 68.5 | |
| 114 | 24.7 | | 101 | 68.5 | | 101 |
| 116 | 22.9 | 23.0 | 93 | 62.2 | 64.0 | 92 |
| 118 | 24.4 | 24.4 | 100 | 66.6 | 63.6 | 98 |
| 123 | 26.2 | 23.7 | 107 | 67.9 | 67.4 | 100 |
| 126 | 24.4 | 25.2 | 100 | 66.4 | 67.1 | 98 |
| 127 | 22.6 | 23.0 | 92 | 67.6 | 66.3 | 100 |
| 129 | 25.9 | 25.5 | 106 | 69.9 | 67.5 | 103 |
| KPPD | 24.2 | 24.5 | 99 | 67.4 | 67.7 | 100 |

Table X

Averages of Mill Quality Data for July 1990
40 lb Ext. Multiwall Grade

| Code | Moisture Content Percent | | | Adj. Basis Wt. *A lb/3000 sq. ft. | | | Gurley Porosity s/100 cc | | |
|---|---|---|---|---|---|---|---|---|---|
| | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 101 | | | | | | | | | |

KPPD

| Code | MD Tear g/sheet | | | Total Tear g/sheet | | |
|---|---|---|---|---|---|---|
| | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 101 | | | | | | |

KPPD

Notes A and B are given in the appendix.

Table X Cont'd

Averages of Mill Quality Data for July 1990
40 lb Ext. Multiwall Grade

| Code | MD Stretch Percent Cur. Av. | MD Stretch Percent Cum. Av. | MD Stretch Percent Ind. *B | CD Stretch Percent Cur. Av. | CD Stretch Percent Cum. Av. | CD Stretch Percent Ind. *B |
|---|---|---|---|---|---|---|
| 101 | | | | | | |

KPPD

| Code | CD TEA ft. lb/sq. ft. Cur. Av. | CD TEA ft. lb/sq. ft. Cum. Av. | CD TEA ft. lb/sq. ft. Ind. *B | Total TEA ft. lb/sq. ft. Cur. Av. | Total TEA ft. lb/sq. ft. Cum. Av. | Total TEA ft. lb/sq. ft. Ind. *B |
|---|---|---|---|---|---|---|
| 101 | | | | | | |

KPPD

Note B is given in the appendix.

Table XI

Averages of Mill Quality Data for August 1990
40 lb Ext. Multiwall Grade

| Code | Moisture Content Percent | | | Adj. Basis Wt. *A lb/3000 sq. ft. | | | Gurley Porosity s/100 cc | | |
|---|---|---|---|---|---|---|---|---|---|
| | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 101 | | | | | | | | | |

KPPD

| Code | MD Tear g/sheet | | | Total Tear g/sheet | | |
|---|---|---|---|---|---|---|
| | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 101 | | | | | | |

KPPD

Notes A and B are given in the appendix.

Table XI Cont'd

Averages of Mill Quality Data for August 1990
40 lb Ext. Multiwall Grade

| Code | MD Stretch Percent Cur. Av. | MD Stretch Percent Cum. Av. | MD Stretch Percent Ind. *B | CD Stretch Percent Cur. Av. | CD Stretch Percent Cum. Av. | CD Stretch Percent Ind. *B |
|---|---|---|---|---|---|---|
| 101 | | | | | | |

KPPD

| Code | CD TEA ft. lb/sq. ft. Cur. Av. | CD TEA ft. lb/sq. ft. Cum. Av. | CD TEA ft. lb/sq. ft. Ind. *B | Total TEA ft. lb/sq. ft. Cur. Av. | Total TEA ft. lb/sq. ft. Cum. Av. | Total TEA ft. lb/sq. ft. Ind. *B |
|---|---|---|---|---|---|---|
| 101 | | | | | | |

KPPD

Note B is given in the appendix.

Table XII

Averages of Mill Quality Data for September 1990
40 lb Ext. Multiwall Grade

| | Moisture Content Percent | | | Adj. Basis Wt. *A lb/3000 sq. ft. | | | Gurley Porosity s/100 cc | | |
|---|---|---|---|---|---|---|---|---|---|
| Code | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 101 | 4.2 | | | 40.2 | | | 8 | | |
| KPPD | 4.2 | | | 40.2 | | | 8 | | |

| | MD Tear g/sheet | | | Total Tear g/sheet | | |
|---|---|---|---|---|---|---|
| Code | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 101 | 93 | | | 193 | | |
| KPPD | 93 | | | 193 | | |

Notes A and B are given in the appendix.

Table XII Cont'd

Averages of Mill Quality Data for September 1990
40 lb Ext. Multiwall Grade

| | MD Stretch Percent | | | CD Stretch Percent | | |
|---|---|---|---|---|---|---|
| Code | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 101 | 6.7 | | | 5.5 | | |

Table XIII

Averages of Mill Quality Data for July 1990
50 lb Ext. Multiwall Grade

| Code | Moisture Content Percent | | | Adj. Basis Wt. *A lb/3000 sq. ft. | | | Gurley Porosity s/100 cc | | |
|---|---|---|---|---|---|---|---|---|---|
| | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 101 | | | | | | | | | |
| 106 | 3.9 | | | 51.2 | | | 5 | | |
| 115 | 3.6 | | | 52.9 | | | 8 | | |
| 121 | 4.2 | | | 52.2 | | | 12 | | |
| 125 | | | | | | | | | |
| KPPD | 3.9 | | | 52.1 | | | 8 | | |

| Code | MD Tear g/sheet | | | Total Tear g/sheet | | |
|---|---|---|---|---|---|---|
| | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 101 | | | | | | |
| 106 | 127 | | | 275 | | |
| 115 | 144 | | | 315 | | |
| 121 | 120 | | | 265 | | |
| 125 | | | | | | |
| KPPD | 130 | | | 285 | | |

Notes A and B are given in the appendix.

Table XIII Cont'd

Averages of Mill Quality Data for July 1990
50 lb Ext. Multiwall Grade

| Code | MD Stretch Percent Cur. Av. | MD Stretch Percent Cum. Av. | MD Stretch Percent Ind. *B | CD Stretch Percent Cur. Av. | CD Stretch Percent Cum. Av. | CD Stretch Percent Ind. *B |
|---|---|---|---|---|---|---|
| 101 | | | | | | |
| 106 | 7.5 | | | 5.3 | | |
| 115 | 6.2 | | | 4.4 | | |
| 121 | 7.1 | | | 6.6 | | |
| 125 | | | | | | |
| KPPD | 6.9 | | | 5.4 | | |

| Code | CD TEA ft. lb/sq. ft. Cur. Av. | CD TEA ft. lb/sq. ft. Cum. Av. | CD TEA ft. lb/sq. ft. Ind. *B | Total TEA ft. lb/sq. ft. Cur. Av. | Total TEA ft. lb/sq. ft. Cum. Av. | Total TEA ft. lb/sq. ft. Ind. *B |
|---|---|---|---|---|---|---|
| 101 | | | | | | |
| 106 | 7.0 | | | 19.3 | | |
| 115 | 5.8 | | | 17.0 | | |
| 121 | 9.2 | | | 24.7 | | |
| 125 | | | | | | |
| KPPD | 7.3 | | | 20.3 | | |

Note B is given in the appendix.

Table XIV

Averages of Mill Quality Data for August 1990
50 lb Ext. Multiwall Grade

| Code | Moisture Content Percent Cur. Av. | Moisture Content Percent Cum. Av. | Moisture Content Percent Ind. *B | Adj. Basis Wt. *A lb/3000 sq. ft. Cur. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Cum. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Ind. *B | Gurley Porosity s/100 cc Cur. Av. | Gurley Porosity s/100 cc Cum. Av. | Gurley Porosity s/100 cc Ind. *B |
|---|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | | |
| 106 | 3.9 | 3.9 | 100 | 51.2 | 51.2 | 98 | 6 | 5 | 72 |
| 115 | 4.0 | 3.6 | 103 | 53.7 | 52.9 | 103 | 8 | 8 | 96 |
| 121 | | 4.2 | | | 52.2 | | | 12 | |
| 125 | 6.0 | | 154 | 51.6 | | 99 | | | |
| KPPD | 4.6 | 3.9 | 119 | 52.2 | 52.1 | 100 | 7 | 8 | 84 |

| Code | MD Tear g/sheet Cur. Av. | MD Tear g/sheet Cum. Av. | MD Tear g/sheet Ind. *B | Total Tear g/sheet Cur. Av. | Total Tear g/sheet Cum. Av. | Total Tear g/sheet Ind. *B |
|---|---|---|---|---|---|---|
| 101 | | | | | | |
| 106 | 126 | 127 | 97 | 271 | 275 | 95 |
| 115 | 135 | 144 | 104 | 318 | 315 | 112 |
| 121 | | 120 | | | 265 | |
| 125 | | | | | | |
| KPPD | 131 | 130 | 100 | 295 | 285 | 103 |

Notes A and B are given in the appendix.

Table XIV Cont'd

Averages of Mill Quality Data for August 1990
50 lb Ext. Multiwall Grade

| Code | MD Stretch Percent Cur. Av. | MD Stretch Percent Cum. Av. | MD Stretch Percent Ind. *B | CD Stretch Percent Cur. Av. | CD Stretch Percent Cum. Av. | CD Stretch Percent Ind. *B |
|---|---|---|---|---|---|---|
| 101 | | | | | | |
| 106 | 7.8 | 7.5 | 113 | 5.4 | 5.3 | 99 |
| 115 | 6.1 | 6.2 | 88 | 5.0 | 4.4 | 92 |
| 121 | | 7.1 | | | 6.6 | |
| 125 | 6.4 | | 92 | 4.9 | | 90 |
| KPPD | 6.8 | 6.9 | 98 | 5.1 | 5.4 | 94 |

| Code | CD TEA ft. lb/sq. ft. Cur. Av. | CD TEA ft. lb/sq. ft. Cum. Av. | CD TEA ft. lb/sq. ft. Ind. *B | Total TEA ft. lb/sq. ft. Cur. Av. | Total TEA ft. lb/sq. ft. Cum. Av. | Total TEA ft. lb/sq. ft. Ind. *B |
|---|---|---|---|---|---|---|
| 101 | | | | | | |
| 106 | 6.3 | 7.0 | 86 | 19.3 | 19.3 | 95 |
| 115 | 7.1 | 5.8 | 97 | 20.1 | 17.0 | 99 |
| 121 | | 9.2 | | | 24.7 | |
| 125 | 7.6 | | 104 | 22.2 | | 109 |
| KPPD | 7.0 | 7.3 | 95 | 20.5 | 20.3 | 101 |

Note B is given in the appendix.

Table XV

Averages of Mill Quality Data for September 1990
50 lb Ext. Multiwall Grade

| Code | Moisture Content Percent Cur. Av. | Moisture Content Percent Cum. Av. | Moisture Content Percent Ind. *B | Adj. Basis Wt. *A lb/3000 sq. ft. Cur. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Cum. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Ind. *B | Gurley Porosity s/100 cc Cur. Av. | Gurley Porosity s/100 cc Cum. Av. | Gurley Porosity s/100 cc Ind. *B |
|---|---|---|---|---|---|---|---|---|---|
| 101 | 3.1 | | 73 | 50.3 | | 96 | 8 | | 104 |
| 106 | 4.0 | 3.9 | 94 | 50.9 | 51.2 | 98 | 6 | 6 | 78 |
| 115 | 3.9 | 3.8 | 91 | 51.8 | 53.3 | 99 | 6 | 8 | 78 |
| 121 | 3.9 | 4.2 | 91 | 51.8 | 52.2 | 99 | 15 | 12 | 196 |
| 125 | 5.9 | 6.0 | 138 | 52.6 | 51.6 | 101 | | | |
| KPPD | 4.2 | 4.3 | 98 | 51.5 | 52.1 | 99 | 9 | 8 | 114 |

| Code | MD Tear g/sheet Cur. Av. | MD Tear g/sheet Cum. Av. | MD Tear g/sheet Ind. *B | Total Tear g/sheet Cur. Av. | Total Tear g/sheet Cum. Av. | Total Tear g/sheet Ind. *B |
|---|---|---|---|---|---|---|
| 101 | 110 | | 84 | 239 | | 82 |
| 106 | 117 | 126 | 90 | 258 | 273 | 89 |
| 115 | 125 | 140 | 96 | 299 | 317 | 103 |
| 121 | 131 | 120 | 100 | 282 | 265 | 97 |
| 125 | | | | | | |
| KPPD | 121 | 130 | 93 | 270 | 290 | 93 |

Notes A and B are given in the appendix.

Table XV Cont'd

Averages of Mill Quality Data for September 1990
50 lb Ext. Multiwall Grade

| Code | MD Stretch Percent Cur. Av. | MD Stretch Percent Cum. Av. | MD Stretch Percent Ind. *B | CD Stretch Percent Cur. Av. | CD Stretch Percent Cum. Av. | CD Stretch Percent Ind. *B |
|---|---|---|---|---|---|---|
| 101 | 7.1 | | 104 | 5.0 | | 95 |
| 106 | 7.7 | 7.6 | 112 | 5.2 | 5.4 | 99 |
| 115 | 5.8 | 6.2 | 85 | 5.1 | 4.7 | 97 |
| 121 | 7.2 | 7.1 | 105 | 7.1 | 6.6 | 135 |
| 125 | 6.4 | 6.4 | 93 | 4.6 | 4.9 | 87 |
| KPPD | 6.8 | 6.9 | 100 | 5.4 | 5.3 | 103 |

| Code | CD TEA ft. lb/sq. ft. Cur. Av. | CD TEA ft. lb/sq. ft. Cum. Av. | CD TEA ft. lb/sq. ft. Ind. *B | Total TEA ft. lb/sq. ft. Cur. Av. | Total TEA ft. lb/sq. ft. Cum. Av. | Total TEA ft. lb/sq. ft. Ind. *B |
|---|---|---|---|---|---|---|
| 101 | 7.6 | | 106 | 23.8 | | 116 |
| 106 | 6.7 | 6.6 | 93 | 20.7 | 19.3 | 101 |
| 115 | 6.3 | 6.4 | 88 | 18.2 | 18.6 | 89 |
| 121 | 10.2 | 9.2 | 142 | 24.2 | 24.7 | 118 |
| 125 | 7.7 | 7.6 | 107 | 23.1 | 22.2 | 113 |
| KPPD | 7.7 | 7.2 | 107 | 22.0 | 20.4 | 108 |

Note B is given in the appendix.

Table XVI

Averages of Mill Quality Data for July 1990
60 lb Ext. Multiwall Grade

| Code | Moisture Content Percent Cur. Av. | Moisture Content Percent Cum. Av. | Moisture Content Percent Ind. *B | Adj. Basis Wt. *A lb/3000 sq. ft. Cur. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Cum. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Ind. *B | Gurley Porosity s/100 cc Cur. Av. | Gurley Porosity s/100 cc Cum. Av. | Gurley Porosity s/100 cc Ind. *B |
|---|---|---|---|---|---|---|---|---|---|
| 101 | | | | | | | | | |
| 106 | 3.9 | | | 60.7 | | | 5 | | |
| 115 | 3.9 | | | 64.2 | | | 9 | | |
| 121 | 4.2 | | | 61.7 | | | 12 | | |
| 125 | | | | | | | | | |
| KPPD | 4.0 | | | 62.2 | | | 9 | | |

| Code | MD Tear g/sheet Cur. Av. | MD Tear g/sheet Cum. Av. | MD Tear g/sheet Ind. *B | Total Tear g/sheet Cur. Av. | Total Tear g/sheet Cum. Av. | Total Tear g/sheet Ind. *B |
|---|---|---|---|---|---|---|
| 101 | | | | | | |
| 106 | 160 | | | 347 | | |
| 115 | 185 | | | 376 | | |
| 121 | 155 | | | 330 | | |
| 125 | | | | | | |
| KPPD | 167 | | | 351 | | |

Notes A and B are given in the appendix.

Table XVI Cont'd

Averages of Mill Quality Data for July 1990
60 lb Ext. Multiwall Grade

| | MD Stretch Percent | | | CD Stretch Percent | | |
|---|---|---|---|---|---|---|
| Code | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 101 | | | | | | |
| 106 | 7.1 | | | 5.0 | | |
| 115 | 6.2 | | | 4.5 | | |
| 121 | 5.8 | | | 5.8 | | |
| 125 | | | | | | |
| KPPD | 6.4 | | | 5.1 | | |

| | CD TEA ft. lb/sq. ft. | | | Total TEA ft. lb/sq. ft. | | |
|---|---|---|---|---|---|---|
| Code | Cur. Av. | Cum. Av. | Ind. *B | Cur. Av. | Cum. Av. | Ind. *B |
| 101 | | | | | | |
| 106 | 8.1 | | | 22.9 | | |
| 115 | 8.3 | | | 20.6 | | |
| 121 | 10.8 | | | 25.6 | | |
| 125 | | | | | | |
| KPPD | 9.1 | | | 23.0 | | |

Note B is given in the appendix.

Table XVII

Averages of Mill Quality Data for August 1990
60 lb Ext. Multiwall Grade

| Code | Moisture Content Percent Cur. Av. | Moisture Content Percent Cum. Av. | Moisture Content Percent Ind. *B | Adj. Basis Wt. *A lb/3000 sq. ft. Cur. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Cum. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Ind. *B | Gurley Porosity s/100 cc Cur. Av. | Gurley Porosity s/100 cc Cum. Av. | Gurley Porosity s/100 cc Ind. *B |
|---|---|---|---|---|---|---|---|---|---|
| 101 | 4.5 | | 113 | 59.4 | | 95 | 10 | | 115 |
| 106 | | 3.9 | | | 60.7 | | | 5 | |
| 115 | 4.1 | 3.9 | 103 | 62.7 | 64.2 | 101 | 10 | 9 | 115 |
| 121 | 4.4 | 4.2 | 110 | 60.9 | 61.7 | 98 | 10 | 12 | 115 |
| 125 | 5.9 | | 148 | 61.9 | | 100 | | | |
| KPPD | 4.7 | 4.0 | 118 | 61.2 | 62.2 | 98 | 10 | 9 | 115 |

| Code | MD Tear g/sheet Cur. Av. | MD Tear g/sheet Cum. Av. | MD Tear g/sheet Ind. *B | Total Tear g/sheet Cur. Av. | Total Tear g/sheet Cum. Av. | Total Tear g/sheet Ind. *B |
|---|---|---|---|---|---|---|
| 101 | 141 | | 85 | 354 | | 101 |
| 106 | | 160 | | | 347 | |
| 115 | 173 | 185 | 104 | 367 | 376 | 105 |
| 121 | 153 | 155 | 92 | 344 | 330 | 98 |
| 125 | | | | | | |
| KPPD | 156 | 167 | 93 | 355 | 351 | 101 |

Notes A and B are given in the appendix.

Table XVII Cont'd

Averages of Mill Quality Data for August 1990
60 lb Ext. Multiwall Grade

| Code | MD Stretch Percent Cur. Av. | MD Stretch Percent Cum. Av. | MD Stretch Percent Ind. *B | CD Stretch Percent Cur. Av. | CD Stretch Percent Cum. Av. | CD Stretch Percent Ind. *B |
|---|---|---|---|---|---|---|
| 101 | 6.9 | | 108 | 5.4 | | 106 |
| 106 | | 7.1 | | | 5.0 | |
| 115 | 6.0 | 6.2 | 94 | 5.1 | 4.5 | 100 |
| 121 | 7.1 | 5.8 | 112 | 5.7 | 5.8 | 112 |
| 125 | 6.5 | | 102 | 4.9 | | 96 |
| KPPD | 6.6 | 6.4 | 104 | 5.3 | 5.1 | 103 |

| Code | CD TEA ft. lb/sq. ft. Cur. Av. | CD TEA ft. lb/sq. ft. Cum. Av. | CD TEA ft. lb/sq. ft. Ind. *B | Total TEA ft. lb/sq. ft. Cur. Av. | Total TEA ft. lb/sq. ft. Cum. Av. | Total TEA ft. lb/sq. ft. Ind. *B |
|---|---|---|---|---|---|---|
| 101 | 7.8 | | 86 | 23.8 | | 103 |
| 106 | | 8.1 | | | 22.9 | |
| 115 | 10.0 | 8.3 | 110 | 22.6 | 20.6 | 98 |
| 121 | 9.3 | 10.8 | 103 | 26.2 | 25.6 | 114 |
| 125 | 8.8 | | 97 | 27.8 | | 121 |
| KPPD | 9.0 | 9.1 | 99 | 25.1 | 23.0 | 109 |

Note B is given in the appendix.

Table XVIII

Averages of Mill Quality Data for September 1990
60 lb Ext. Multiwall Grade

| Code | Moisture Content Percent Cur. Av. | Moisture Content Percent Cum. Av. | Moisture Content Percent Ind. *B | Adj. Basis Wt. *A lb/3000 sq. ft. Cur. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Cum. Av. | Adj. Basis Wt. *A lb/3000 sq. ft. Ind. *B | Gurley Porosity s/100 cc Cur. Av. | Gurley Porosity s/100 cc Cum. Av. | Gurley Porosity s/100 cc Ind. *B |
|---|---|---|---|---|---|---|---|---|---|
| 101 | 4.6 | 4.5 | 105 | 60.8 | 59.4 | 99 | 26 | 10 | 279 |
| 106 | 4.2 | 3.9 | 96 | 60.5 | 60.7 | 98 | 6 | 5 | 64 |
| 115 | | 4.0 | | | 63.4 | | | 10 | |
| 121 | 4.1 | 4.3 | 94 | 62.3 | 61.3 | 101 | 12 | 11 | 129 |
| 125 | 6.1 | 5.9 | 140 | 62.3 | 61.9 | 101 | | | |
| KPPD | 4.8 | 4.4 | 109 | 61.5 | 61.7 | 100 | 15 | 9 | 157 |

| Code | MD Tear g/sheet Cur. Av. | MD Tear g/sheet Cum. Av. | MD Tear g/sheet Ind. *B | Total Tear g/sheet Cur. Av. | Total Tear g/sheet Cum. Av. | Total Tear g/sheet Ind. *B |
|---|---|---|---|---|---|---|
| 101 | 139 | 141 | 86 | 318 | 354 | 90 |
| 106 | 142 | 160 | 88 | 321 | 347 | 91 |
| 115 | | 179 | | | 372 | |
| 121 | 154 | 154 | 96 | 337 | 337 | 95 |
| 125 | | | | | | |
| KPPD | 145 | 161 | 90 | 325 | 353 | 92 |

Notes A and B are given in the appendix.

Table XVIII Cont'd

Averages of Mill Quality Data for September 1990
60 lb Ext. Multiwall Grade

| Code | MD Stretch Percent Cur. Av. | MD Stretch Percent Cum. Av. | MD Stretch Percent Ind. *B | CD Stretch Percent Cur. Av. | CD Stretch Percent Cum. Av. | CD Stretch Percent Ind. *B |
|---|---|---|---|---|---|---|
| 101 | 7.4 | 6.9 | 114 | 5.7 | 5.4 | 110 |
| 106 | 7.6 | 7.1 | 117 | 5.2 | 5.0 | 100 |
| 115 | | 6.1 | | | 4.8 | |
| 121 | 7.3 | 6.4 | 112 | 6.4 | 5.8 | 123 |
| 125 | 6.6 | 6.5 | 102 | 5.0 | 4.9 | 96 |
| KPPD | 7.2 | 6.5 | 111 | 5.6 | 5.2 | 107 |

| Code | CD TEA ft. lb/sq. ft. Cur. Av. | CD TEA ft. lb/sq. ft. Cum. Av. | CD TEA ft. lb/sq. ft. Ind. *B | Total TEA ft. lb/sq. ft. Cur. Av. | Total TEA ft. lb/sq. ft. Cum. Av. | Total TEA ft. lb/sq. ft. Ind. *B |
|---|---|---|---|---|---|---|
| 101 | 9.5 | 7.8 | 105 | 28.3 | 23.8 | 118 |
| 106 | 7.7 | 8.1 | 85 | 24.3 | 22.9 | 101 |
| 115 | | 9.2 | | | 21.6 | |
| 121 | 10.9 | 10.0 | 121 | 28.5 | 25.9 | 118 |
| 125 | 9.3 | 8.8 | 103 | 20.5 | 27.8 | 85 |
| KPPD | 9.4 | 9.0 | 104 | 25.4 | 24.1 | 106 |

Note B is given in the appendix.

TABLE XIX
Data on Conditioning and Testing Environments
JUL, AUG, SEP 1990

| Mill | | Conditioning, Before Testing | | |
|---|---|---|---|---|
| Code | Preconditioning | Temp,°F | RH, % | Time, min |
| 101 | NO | -- | -- | -- |
| 102 | NO | 73 | 50 | 15 |
| 103 | NO | 70 | 50 | 20 |
| 104 | YES | 73 | 50 | 20 |
| 106 | NO | 73 | 50 | 10 |
| 108 | NO | -- | -- | -- |
| 109 | NO | 70 | 50 | 20 |
| 110 | NO | 72 | 50 | 30 |
| 111 | NO | 73 | 50 | 6 |
| 112 | NO | 73 | 50 | 10 |
| 114 | NO | 73 | 50 | 6 |
| 115 | YES | 73 | 50 | 20 |
| 116 | NO | 73 | 50 | 0 |
| 118 | NO | 70 | 50 | 20 |
| 119 | NO | 73 | 50 | 6 |
| 121 | NO | 72 | 50 | 30 |
| 122 | NO | 73 | 50 | 15 |
| 123 | NO | 73 | 50 | 10 |
| 125 | NO | 70 | 50 | 20 |
| 126 | YES | 73 | 50 | 20 |
| 127 | NO | 73 | 50 | 6 |
| 129 | NO | 73 | 50 | 10 |
| 130 | NO | 73 | 50 | 15 |

TABLE XX
Tear and Tensile Testing Variables
JUL, AUG, SEP 1990

| Mill | Tear Tester | | Tensile Method | | Tensile Test Variables | | |
|---|---|---|---|---|---|---|---|
| Code | Old | New | T404 | T494 | Length, in | Width, in | Speed, in/min |
| 101 | | x | | x | 6 | 1 | 1 |
| 102 | | x | | x | 7 | 1 | 4 |
| 103 | | x | | x | 5 | 1 | 5 |
| 104 | | x | | x | 7.1 | 1 | 2 |
| 106 | x | | | x | 4.8 | 1 | 1 |
| 108 | | x | | x | 6 | 1 | 1 |
| 109 | | x | | x | 5 | 1 | 5 |
| 110 | x | | | x | 4.8 | 1 | 2 |
| 111 | | x | | x | 6 | 1 | 2 |
| 112 | x | | | x | 7.1 | 1 | 1(MD) 2.7(CD) |
| 114 | | x | | x | 6 | 1 | 2 |
| 115 | | x | | x | 7.1 | 1 | 2 |
| 116 | | x | x | | 7.1 | 1 | 25.8 |
| 118 | | x | x | | -- | -- | -- |
| 119 | | x | | x | 6 | 1 | 6 |
| 121 | x | | | x | 4.8 | 1 | 2 |
| 122 | | x | | x | 8 | 1 | 2 |
| 123 | x | | | x | 7.1 | 1 | 1(MD) 2.7(CD) |
| 125 | | x | | x | 5 | 1 | 5 |
| 126 | | x | | x | 7.1 | 1 | 2 |
| 127 | | x | | x | 6 | 1 | 2 |
| 129 | x | | | x | 7.1 | 1 | 2 |
| 130 | | x | | x | 8 | 1 | 2 |

# APPENDIX

## NOTES A AND B USED IN TABULATIONS OF MILL DATA

Note A, used in the tables of mill data, defines the procedure for calculating adjusted basis weight. The adjusted basis weight is that corresponding to a moisture content of 7.25%, calculated as follows:

$$ABW = RBW\ [(100 - RMC) / (100 - 7.25)]$$

where: ABW = adjusted basis weight, RBW = reported basis weight, and RMC = reported moisture content.

Note B, used in the tables of mill data, defines the procedures for calculating either machine index or K.P.P.D. index. These indexes are the ratio of either the machine or KPPD current average to the KPPD cumulative average, calculated as follows:

$$MI = 100\ (CMA/CUM\ KPPDA)$$

$$KPPDI = 100\ (CKPPDA/CUM\ KPPDA)$$

where: MI = Machine Index, KPPDI = KPPD index,

CMA = current machine average for a specific physical property of a specific multiwall bag paper grade obtained during the current month on a specific machine,

CKPPDA = current average of all machine averages for a specific physical property of a specific multiwall bag paper grade obtained during the current month,

and: CUM KPPDA = the average CKPPDA for the previous twelve months, not including the current month.

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